

**REMARKS****A. Interview with the Examiner**

Applicants thank the Examiner for the courtesy extended to Applicants' representative during a telephone interview on November 27, 2007. During the interview, the claim rejections set forth in the May 29, 2007 Office Action were discussed, along with possible amendments to the claims.

**B. Status of the Oath or Declaration**

The Examiner indicates that a new oath or declaration is required, because the handwritten alterations made to Joseph Tai's address in the previously submitted oath or declaration were not initialed by him. Applicants have forwarded a new oath or declaration to Joseph Tai for execution and will submit the new oath or declaration as soon as it is available.

**C. Status of the Specification**

The Examiner objects to the specification, because the first paragraph of the specification, which was added by Preliminary Amendment on February 23, 2004, does not reflect the fact that U.S. Application Serial No. 09/120,044 is now issued as U.S. Patent No. 6,764,686. In response, Applicants have amended the specification to reflect the change in status of U.S. Application Serial No. 09/120,044 (see page 8 of this paper).

Minor stylistic amendments were made to the first paragraph as well. These minor amendments are considered to be purely cosmetic and do not add any new matter.

D. Status of the Claims

Claims 16-21 and 27-40 are pending, with claims 27-30 being withdrawn from consideration. Currently, claims 16-21 and 31-40 are under examination.

Claims 19 and 32-40 stand rejected under 35 U.S.C. § 101, for allegedly being directed to non-statutory subject matter.

Claim 17-21 and 32-40 are rejected under 35 U.S.C. § 112, ¶ 1 for allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 16-21 and 31 are rejected under 35 U.S.C. § 112, ¶ 2 for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claim 31 is objected to for containing the limitation “of:”, as opposed to “--of--”.

E. Explanation of the Amendments

Claim 1 has been amended to correct a minor grammatical error.

Claim 17 has been amended to recite, *inter alia*, “a recombinant nucleic acid molecule.” Support for this amendment is found throughout the application as filed (e.g., see originally filed claim 17).

Claims 19-21 have been amended to clarify the invention. The claims now recite, *inter alia*, a “genetically engineered microorganism or a “genetically engineered cell.” Support for these amendments are generally found throughout the specification. For example, the portion of the originally filed specification starting at page 30, line 27 and ending at page 33, line 1

provides examples of some of the genetic engineering techniques contemplated by the invention. Additionally, the paragraph beginning at line 2 of page 33 describes some of the various expression hosts contemplated by the invention and provides support for a “microorganism” and a “cell” as recited in claims 19-21.

Claim 31 has been amended to correct a minor grammatical error and to clarify that the molecule is “incorporated into a vector”. Support for this added claim language is found in the originally filed specification [e.g., see page 30, line 5 to page 33, line 1].

Claims 32-40 have been amended to clarify the preamble, as suggested by the Examiner. These claims now recite “A nucleic acid molecule encoding the nucleic acid sequence...”. Support for this amendment is found in Example 5 and Table 6 of the originally filed specification.

Applicants respectfully assert that no new matter has been added by these amendments.

E. Applicants’ Claims 19 and 32-40 Are Directed to Statutorily Patentable Subject Matter

The Examiner rejects claims 19 and 32-40 under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter. According to the Examiner, claim 19, as written, does not sufficiently distinguish over a pneumococcus microorganism as it exists naturally comprising one or more spontaneous mutations in the recited nucleic acid sequence, because the claim does not particularly point out any non-naturally occurring differences between the claimed product and the naturally occurring product [Office Action, ¶ 10]. Moreover, the Examiner contends that the “molecule” claimed in claims 32-40 “encompasses a non-isolated microorganism as it exists naturally” [Office Action, ¶ 10].

As an initial matter, Applicants note that claim 19 depends from claims 16-17 and 32-40, which specify non-naturally occurring nucleic acid sequences. Thus, the “microorganism” or “cell” recited in claim 19 is man-made, and therefore patentable under 35 U.S.C. § 101. See Diamond v. Chakrabarty, 447 U.S. 303, 206 USPQ 193 [holding that a genetically engineered microorganism capable of degrading multiple components of crude oil was patentable subject matter under 35 U.S.C. § 101]. To emphasize the man-made aspect of the “microorganism” or “cell” recited in claim 19, Applicants have amended the claim to recite that the “microorganism” and “cell” are “genetically engineered”.

Claims 32-40 are directed to man-made nucleic acid molecules corresponding to man-made pneumolysin sequences that are made according to the methods set forth in Applicants’ specification [e.g. see Example 5 and Table 6]. Thus, the molecules claimed in claims 32-40 are patentable subject matter under 35 U.S.C. § 101.

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 19 and 32-40 under 35 U.S.C. § 101.

F. Applicants’ Claims 17-21 and 32-40 Do Not Contain New Matter

The Examiner rejects claims 17-21 and 32-40 under 35 U.S.C. § 112, ¶ 1 for allegedly containing new matter. To clarify this rejection, Applicants’ representative contacted the Examiner on November 27, 2007, asking for an explanation of the Examiner’s statement that “the generic limitation ‘recombinant molecule’ encompasses a plethora of molecules including bacteria, viruses, fungi, parasites, bacteriophages, vectors, plasmids, cosmids, human cells and any molecule.” As noted by Applicants’ representative during the telephonic interview,

microorganisms such as bacteria, fungi, and the like would not be considered a “molecule” by one of ordinary skill in the art.

In response, the Examiner explained that she believed the term “recombinant molecule” would encompass more than nucleic acids. Moreover, she indicated that amending claim 17 to recite a “recombinant nucleic acid molecule” would overcome the new matter rejection. Similarly, she suggested amending the preambles of new claims 32-40 to recite “A nucleic acid molecule encoding the nucleic acid sequence of modified pneumolysin polypeptide...”

Without agreeing to the propriety of the rejection, Applicants have amended claim 17 and claims 32-40 as suggested by the Examiner in order to expedite prosecution. Accordingly, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

G. Applicants’ Claims 16-21 and 31 Are Not Indefinite

(a) The Examiner rejects claim 16 for indefiniteness, stating that it is unclear whether the two instances of the term “wild-type pneumolysin” in claim 16 refer to the same compound. Applicants respectfully traverse this rejection.

Lines 3-4 of claim 16, as set forth in the above claim listing, specify that the “wild-type pneumolysin” has “the amino acid sequence of SEQ ID NO:3.” Thus, the skilled artisan would know that this portion of the claim clearly refers to a specific amino acid sequence (i.e., the sequence shown in the sequence listing as SEQ ID NO. 3). Moreover, Applicants respectfully submit that one of ordinary skill in the art would also know the meaning of the term “wild-type pneumolysin” as used in the last line of the version of claim 16 on page 2 of this

paper. Applicants also note that substantially the same language was allowed by the Examiner herself in U.S. Patent No. 6,764,686. For at least these reasons, Applicants maintain that the use of the phrase “wild-type pneumolysin” in claim 16 is not indefinite and request reconsideration and withdrawal of this ground of rejection.

(b) The Examiner rejects claim 20 for being indefinite, stating that mammalian and insect cells are not microorganisms. In this paper, Applicants have amended claim 20 so that the preamble recites “The genetically engineered microorganism or genetically engineered cell according to claim 19...” Applicants respectfully assert that amended claim 20 is not indefinite and request reconsideration and withdrawal of this ground of rejection.

(c) The Examiner states that the phrase “non-coding sequence changes thereof” in claim 17 is vague and confusing. Applicants respectfully disagree. One of ordinary skill in the art would understand that this language refers to nucleotide mutations which lead to the same translated amino acid sequence. Such nucleotide mutations are described in Applicants’ specification:

[a]dditional nucleotide mutations may be made that were not identified in the selection process particularly where the translated amino acid is the same as the identified amino acid predicted based on the sequence of the selected clone [specification, page 33, line 30 to page 34, line 4].

Thus, Applicants maintain that the phrase “non-coding sequence changes thereof” in claim 17 is not vague and confusing.

(d) The Examiner rejects claim 31 for indefiniteness for allegedly having improper antecedent basis for the phrase “the vector”. This rejection is moot in view of the amendments to claim 31 presented in the foregoing claim listing.

(e) Claim 16 is rejected for allegedly being indefinite for reciting “said more than one amino acid substitution occurs” rather than “said more than one amino acid substitutions occur.” This ground of rejection is moot in view of the amendments made to claim 16.

(f) The Examiner rejects dependent claims 18-21 and 31 for being indefinite, because these claims depend from claim 16 or 17, which are also held to be indefinite by the Examiner. However, in view of the foregoing amendments and remarks, Applicants respectfully assert that claims 18-21 and 31 are not indefinite, and request reconsideration and withdrawal of this ground of rejection.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **50-3732**, Order No. **13564-105004US3**. In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **50-3732**, Order No. 13564-105004.

Respectfully submitted,  
King & Spalding, LLP

Dated: November 29, 2007

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